

# Surface Mount Fuses

## RoHS NANO<sup>2</sup>® FUSE Very Fast-Acting 451/453 Series



The Nano<sup>2</sup> SMF Fuse is a very small, square surface mount fuse that is also available in a surface mount holder.

- 451 Series **RoHS Compliant** version now available, use ordering suffix 'L' (see example on data sheet).

### ELECTRICAL CHARACTERISTICS:

| % of Ampere Rating | Ampere Rating | Opening Time               |
|--------------------|---------------|----------------------------|
| 100%               | 1/16–15       | 4 hours, <b>Minimum</b>    |
| 200%               | 1/16–10       | 5 seconds, <b>Maximum</b>  |
|                    | 12–15         | 20 seconds, <b>Maximum</b> |

**AGENCY APPROVALS:** Recognized under the Components Program of Underwriters Laboratories and Certified by CSA. Approved by METI from 1 through 5 amperes.

**AGENCY FILE NUMBERS:** UL E10480, CSA LR 29862.

### INTERRUPTING RATINGS:

|           |                                                                      |
|-----------|----------------------------------------------------------------------|
| 1/16 – 8A | 50 amperes at 125 VAC/VDC<br>300 amperes at 32 VDC                   |
| 10A       | 35 amperes at 125 VAC/50 amperes at 125 VDC<br>300 amperes at 32 VDC |
| 12A – 15A | 50 amperes at 65 VAC/VDC<br>300 amperes at 24 VDC                    |

### ENVIRONMENTAL SPECIFICATIONS:

**Operating Temperature:** –55°C to 125°C.

**Shock:** MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds).

**Vibration:** MIL-STD-202, Method 201 (10–55 Hz).

**Salt Spray:** MIL-STD-202, Method 101, Test Condition B.

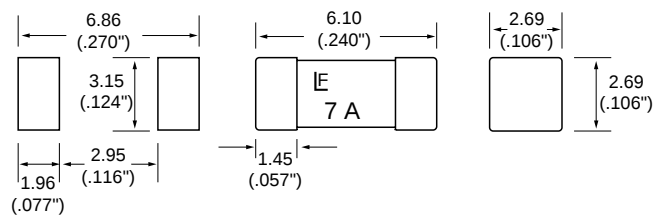
**Insulation Resistance (After Opening):** MIL-STD-202, Method 302, Test Condition A, (10,000 ohms minimum).

**Resistance to Soldering Heat:** MIL-STD-202, Method 210, Test Condition B (10 sec. at 260°C).

**Thermal Shock:** MIL-STD-202, Method 107, Test Condition B (–65 to 125°C).

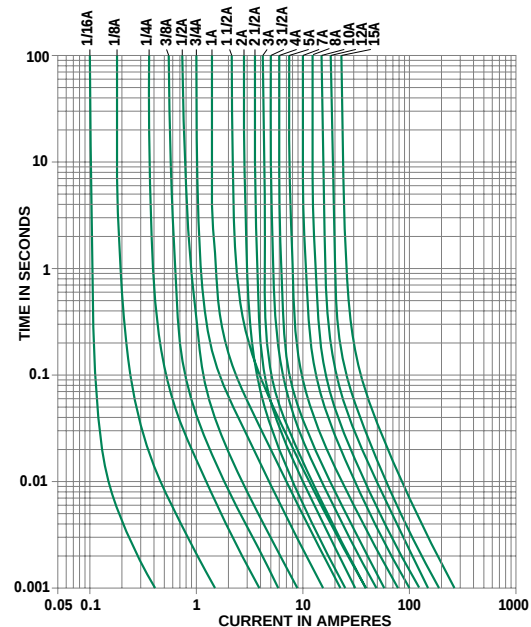
**Moisture Resistance:** MIL-STD-202, Method 106, High Humidity (90–98 RH), Heat (65°C).

| Tin-Lead Plated Catalog # | Silver Plated Catalog # | Ampere Rating | Voltage Rating | Nominal Resistance Cold Ohms | Nominal Melting I <sup>2</sup> t A <sup>2</sup> Sec. |
|---------------------------|-------------------------|---------------|----------------|------------------------------|------------------------------------------------------|
| —                         | 0451.062                | 0.062         | 125            | 5.50                         | 0.00019                                              |
| —                         | 0451.080                | 0.080         | 125            | 4.05                         | 0.00033                                              |
| —                         | 0451.100                | 0.100         | 125            | 3.10                         | 0.00138                                              |
| —                         | 0451.125                | 0.125         | 125            | 1.70                         | 0.00286                                              |
| 0451.160                  | 0453.160                | 0.160         | 125            | 1.80                         | 0.00306                                              |
| 0451.200                  | 0453.200                | 0.200         | 125            | 1.40                         | 0.00652                                              |
| 0451.250                  | 0453.250                | 0.250         | 125            | 1.05                         | 0.01126                                              |
| 0451.315                  | 0453.315                | 0.315         | 125            | 0.78                         | 0.0231                                               |
| 0451.375                  | 0453.375                | 0.375         | 125            | 0.610                        | 0.0425                                               |
| 0451.400                  | 0453.400                | 0.400         | 125            | 0.560                        | 0.0484                                               |
| 0451.500                  | 0453.500                | 0.500         | 125            | 0.420                        | 0.0795                                               |
| 0451.630                  | 0453.630                | 0.630         | 125            | 0.305                        | 0.143                                                |
| 0451.750                  | 0453.750                | 0.750         | 125            | 0.245                        | 0.185                                                |
| 0451.800                  | 0453.800                | 0.800         | 125            | 0.212                        | 0.271                                                |
| 0451 001.                 | 0453 001.               | 1.0           | 125            | 0.153                        | 0.459                                                |
| 0451 1.25                 | 0453 1.25               | 1.25          | 125            | 0.0780                       | 0.664                                                |
| 0451 01.5                 | 0453 01.5               | 1.5           | 125            | 0.0630                       | 0.853                                                |
| 0451 01.6                 | 0453 01.6               | 1.6           | 125            | 0.0580                       | 1.060                                                |
| 0451 002.                 | 0453 002.               | 2.0           | 125            | 0.0367                       | 0.530                                                |
| 0451 02.5                 | 0453 02.5               | 2.5           | 125            | 0.0286                       | 1.029                                                |
| 0451 003.                 | 0453 003.               | 3.0           | 125            | 0.0227                       | 1.650                                                |
| 0451 3.15                 | 0453 3.15               | 3.15          | 125            | 0.0215                       | 1.920                                                |
| 0451 03.5                 | 0453 03.5               | 3.5           | 125            | 0.0200                       | 2.469                                                |
| 0451 004.                 | 0453 004.               | 4             | 125            | 0.0160                       | 3.152                                                |
| 0451 005.                 | 0453 005.               | 5             | 125            | 0.0125                       | 5.566                                                |
| 0451 06.3                 | 0453 06.3               | 6.3           | 125            | 0.0096                       | 9.17                                                 |
| 0451 007.                 | 0453 007.               | 7             | 125            | 0.0090                       | 10.32                                                |
| 0451 008.                 | 0453 008.               | 8             | 125            | 0.0077                       | 20.23                                                |
| 0451 010.                 | 0453 010.               | 10            | 125            | 0.0056                       | 26.46                                                |
| 0451 012.                 | 0453 012.               | 12            | 65             | 0.0049                       | 47.97                                                |
| 0451 015.                 | 0453 015.               | 15            | 65             | 0.0037                       | 97.82                                                |



Recommended pad layout

### Average Time Current Curves



### PHYSICAL SPECIFICATIONS:

**Materials:** Body: Ceramic  
Terminations: Tin-Lead Alloy  
RoHS Compliant Terminations: Gold over Nickel Plated Caps(451)  
Silver Plated Caps(453)

### Soldering Parameters(see page 3 for typical soldering profile):

Wave Solder — 260°C, 10 seconds maximum  
Reflow Solder — 260°C, 30 seconds maximum

**Solderability:** MIL-STD-202, Method 208.

**PACKAGING SPECIFICATIONS:** 12mm Tape and Reel per EIA-RS481-1 (IEC 286, part3); 1,000 pieces per reel, add packaging suffix, MR; 5,000 per reel, add packaging suffix NR.

**Options:** For RoHS Compliant 451 series add the letter 'L' to end of packaging suffix. Example: R451001.MRL (RoHS Compliant 1A, 1,000 per reel).

### PATENTED

Refer to pg. 374 for SMF Omni-Blok® Holder, Series 154 000.